

LISTING OF CLAIMS:

Claim 1 (Previously Presented) A process of producing a xylose solution from a hydrolysate of a xylan-containing vegetable material comprising subjecting said hydrolysate to nanofiltration and recovering as a nanofiltration permeate a solution enriched in xylose.

Claim 2 (Previously Presented) A process as claimed in claim 1 comprising recovering as a retentate a solution including lignosulphonates, oligosaccharides, hexose sugars and divalent salts.

Claim 3 (Currently Amended) A process as claimed in claim 1, comprising recovering as the nanofiltration permeate a xylose solution having a xylose content of over 1.1 times hydrolysate, based on dry substance content.

Claim 4 (Previously Presented) A process as claimed in claim 3, comprising recovering a xylose solution having a xylose content of 1.5 to 2.5 times that of the hydrolysate, based on dry substance content.

Claim 5 (Previously Presented) A process as claimed in claim 1, wherein the hydrolysate has a dry substance content of 3 to 50 % by weight.

Claim 6 (Previously Presented) A process as claimed in claim 1, wherein the hydrolysate used as the nanofiltration feed has a dry substance content of less than 30% by weight.

Claim 7 (Previously Presented) A process as claimed in claim 1, wherein the hydrolysate has a xylose content of 5 to 95 %, based on dry substance content.

Claim 8 (Previously Presented) A process as claimed in claim 1, wherein the hydrolysate of xylan-containing vegetable material is a spent liquor obtained from a pulping process.

Claim 9 (Previously Presented) A process as claimed in claim 8, wherein the spent liquor obtained from a pulping process is a spent sulphite pulping liquor.

Claim 10 (Previously Presented) A process as claimed in claim 9, wherein the spent sulphite pulping liquor is an acid spent sulphite pulping liquor.

Claim 11 (Previously Presented) A process as claimed in claim 9 wherein the spent sulphite pulping liquor is obtained from hardwood sulphite pulping.

Claims12-13 (Cancelled)

Claim 14 (Previously Presented) A process as claimed in claim 8, wherein the spent liquor is a mother liquor obtained from crystallization of xylose.

Claim 15 (Previously Presented) A process as claimed in claim 1, wherein the nanofiltration is carried out at a pH of 1 to 7.

Claim 16 (Previously Presented) A process as claimed in claim 1, wherein the nanofiltration is carried out at a pressure of 10 to 50 bar.

Claim 17 (Previously Presented) A process as claimed in claim 1, wherein the nanofiltration is carried out at a temperature of 5 - 95 °C.

Claim 18 (Previously Presented) A process as claimed in claim 1, wherein the nanofiltration is carried out with a flux of 10 to 100 liters/m²h.

Claim 19 (Previously Presented) A process as claimed claim 1, wherein the nanofiltration is carried out using a nanofiltration membrane selected from polymeric and inorganic membranes having a cut-off size of 100 to 2500 g/mol.

Claim 20 (Previously Presented) A process as claimed in claim 19, wherein the cut-off size of the nanofiltration membrane is 150 to 1000 g/mol.

Claim 21 (Previously Presented) A process as claimed in claim 20, wherein the cut-off size of the nanofiltration membrane is 150 to 500 g/mol.

Claim 22 (Previously Presented) A process as claimed in claim 19, wherein the nanofiltration membrane is selected from ionic membranes.

Claim 23 (Previously Presented) A process as claimed in claim 19, wherein the nanofiltration membrane is selected from hydrophobic and hydrophilic membranes.

Claim 24 (Previously Presented) A process as claimed in claim 19, wherein the nanofiltration membrane is selected from cellulose acetate membranes, polyethersulfone membranes, sulfonated polyether sulphone membranes, polyester membranes, polysulfone membranes, aromatic polyamide membranes, polyvinyl alcohol membranes and polypiperazine membranes and combinations thereof.

Claim 25 (Previously Presented) A process as claimed in claim 24, wherein the nanofiltration membrane is selected from sulfonated polyether sulfone membranes and polypiperazine membranes.

Claim 26 (Previously Presented) A process as claimed in claim 24, wherein the nanofiltration membrane is selected from a polypiperazine membrane having a cut-off size of 200 g/mol, a permeability at 25°C of 7-8 l/(m²h bar) and a NaCl retention of 70_%, and a polyester-polysulfone membrane having a cut-off size of 150 to 300 g/mol, a permeability at 25°C of 5.4 l/(m²h bar) and a MgSO₄ retention of 98% at 2 g/l.

Claim 27 (Previously Presented) A process as claimed in claim 19, wherein the nanofiltration membrane has a form selected from sheets, tubes, spiral membranes and hollow fibers.

Claim 28 (Previously Presented) A process as claimed in claim 19, wherein the nanofiltration membrane is selected from high shear type membranes.

Claim 29 (Previously Presented) A process as claimed in claim 19, wherein the nanofiltration membrane has been pretreated by washing.

Claim 30 (Previously Presented) A process as claimed in claim 29, wherein the washing includes a washing agent is selected from ethanol an alkaline detergent, or a combination thereof.

Claim 31 (Previously Presented) A process as claimed claim 1, wherein the nanofiltration process is repeated at least once.

Claim 32 (Previously Presented) A process as claimed in claim 1, wherein the process is carried out batchwise or continuously.

Claim 33 (Previously Presented) A process as claimed in claim 1, wherein the process is carried out using a nanofiltration equipment including several nanofiltration elements arranged in parallel or series.

Claim 34 (Previously Presented) A process as claimed in claim 1, further comprising one or more pretreatment steps.

Claim 35 (Previously Presented) A process as claimed in claim 34, wherein the one or more pretreatment steps are selected from ion exchange, ultrafiltration, chromatography, concentration, pH adjustment, filtration, dilution, crystallization and combinations thereof.

Claim 36 (Previously Presented) A process as claimed in claim 1, further comprising one or more post-treatment steps.

Claim 37 (Previously Presented) A process as claimed in claim 36, wherein the one or more post-treatment steps are selected from ion exchange, crystallization, chromatography, concentration, reverse osmosis and color removal.

Claim 38 (Previously Presented) A process as claimed in claim 36, wherein the one or more post-treatment steps includes a reduction step which converts xylose to xylitol.

Claim 39 (Previously Presented) A process as claimed in claim 1, wherein the solution enriched in xylose and recovered as the nanofiltration permeate also includes other pentose sugars.

Claim 40 (Previously Presented) A process as claimed in claim 39, wherein the other pentose sugars comprise arabinose.

Claim 41 (Previously Presented) A process as claimed in claim 2, wherein said hexoses recovered in the nanofiltration retentate comprise one or more of glucose, galactose, rhamnose and mannose.

Claim 42 (Cancelled)

Claim 43 (Previously Presented) A process as claimed in claim 3, wherein the xylose content of the xylose solution is over 1.5 times that of the hydrolysate, based on dry substance content.

Claim 44 (Previously Presented) A process as claimed in claim 43, wherein the xylose content of the xylose solution is over 2.5 times that of the hydrolysate, based on dry substance content.

Claim 45 (Previously Presented) A process as claimed in claim 3, further comprising recovering a xylose-solution having a xylose content of over 1.5 to 2.5 time that of the hydrolysate, based on dry substance content.

Claim 46 (Previously Presented) A process as claimed in claim 5, wherein the dry substance content of the hydrolysate is 8 to 25% by weight.

Claim 47 (Previously Presented) A process as claimed in claim 7, wherein the hydrolysate has a xylose content of 15 to 55% by weight, based on the dry substance content.

Claim 48 (Previously Presented) A process as claimed in claim 7, wherein the hydrolysate has a xylose content of 15 to 40% by weight, based on the dry substance content.

Claim 49 (Currently Amended) A process as claimed in claim 7, wherein the hydrolysate has a xylose content of 8 to 27 ~~15 to 55~~% by weight, based on the dry substance content.

Claim 50 (Previously Presented) A process as claimed in claim 15, wherein the nanofiltration is carried out at a pH of 3 to 6.5.

Claim 51 (Previously Presented) A process as claimed in claim 50, wherein the nanofiltration is carried out at a pH of 5 to 6.5.

Claim 52 (Previously Presented) A process as claimed in claim 16, wherein the nanofiltration is carried out at a pressure of 15 to 35 bar.

Claim 53 (Previously Presented) A process as claimed in claim 17, wherein the nanofiltration is carried out at a temperature of 30 to 60 °C.